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EXAMINER
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BERNATZ, KEVIN M

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**Commissioner for Patents**

In compliance with the Remand to the Examiner from the Board of Patent Appeals and Interferences on April 14, 2004, the scope of the "corresponding structure" and "equivalent structures" of the means plus function language in claim 7 are defined as follows.

**Corresponding Structure**

Claim 7 recites the limitations "high SMNR", "narrow half-amplitude pulse width" (i.e. narrow PW50), "high resolution" and "high magnetic saturation" (i.e. high Ms). All of the terms above are relative terms in which appellants have not defined the magnetude or range encompassed by "high" or "narrow". Appellants have provided admissions that control of these properties can be influenced by a variety of structural and material properties, such as using small, uniform magnetically non-coupled grains to increase resolution and SMNR (pages 2 and 3), using a high coercivity (Hc) to narrow the PW50 - which results in a higher recording density (page 4), increasing the Cr content to increase the SMNR (page 4), increasing the Co content to increase the Ms (page 4), increasing the Pt content to increase the Hc (page 4), and decreasing the thickness of the magnetic layer to increase resolution and narrow PW50, but at the cost of lowering Ms (page 4).

As such, the Examiner deems that the corresponding structure in the written description to meet the means plus function language of claim 7 is a CoCrPt first magnetic layer with a CoCrPt second magnetic layer (page 8) stacked in any order, wherein the 1<sup>st</sup> magnetic layer has a higher Cr content and a lower Co content than the 2<sup>nd</sup> magnetic layer (page 8).


**Equivalent Structures**


Since the terms "high" and "narrow" are relative terms, the Examiner has given these limitations the broadest reasonable interpretation consistent with the written description in appellants' specification as it would be interpreted by one of ordinary skill in the art. Specifically, the Examiner notes that all of these properties are admitted as being known to be desired by one of ordinary skill in the art (page 2 - 4) and the majority of prior art references explicitly teach recording media having improved performance, which is deemed to read on the relative terms "high SMNR", "narrow half-amplitude pulse width" and "high resolution". Films possessing a majority of Co or other ferromagnetic elements (Fe, Ni) would also be deemed to be "high Ms" alloys in the majority of cases.

Given the above knowledge, the Examiner notes that appellants have provided evidence that to obtain the combination of all of the claimed relative properties, multiple magnetic layers must be used (page 4, lines 13 - 21 and page 6, line 18 bridging page 7, line 1). As such, the Examiner has interpreted the equivalent structure to necessarily possess a recording medium comprising at least 2 magnetic layers, wherein at least one layer possesses properties which lead to an improved (i.e. "high") SMNR (e.g. high Cr content, uniform grain size distribution, good grain segregation, high B content, etc) and at least one layer having improved (i.e. "high") Ms (e.g. high Co content, increased thickness, high overall ferromagnetic element content, etc). The limitations "high resolution" and narrow PW50 are deemed to necessarily flow from such a structure since such properties are known to be desired in the art as described above.

Regarding the rejection of record under Ohkijima et al., the Examiner notes that Ohkijima et al. discloses a structure meeting the equivalent structure described above (e.g. Example 26) and teach that the media possess a high Hc (i.e. narrow PW50) and high SMNR (col. 1, lines 18 - 21 and lines 50 - 52). While Ohkijima et al. do not disclose explicit values for these properties, Ohkijima et al. does state that the taught media exhibit "excellent recording performance in comparison to conventional magnetic recording media" (col. 8, lines 45 - 49).

Regarding the rejection of record under Moroishi et al., the Examiner notes that the combined teachings of Moroishi et al., Miyazaki et al. and Zhang et al. would necessarily lead to a structure meeting the equivalent structure described above. I.e. at least 2 magnetic layers, one of which possesses a high SMNR (as taught by Miyazaki et al.) and one of which possesses a high Ms (as taught by Zhang et al.). Again, the limitations in "high resolution" and "high SMNR" are deemed to necessarily flow from such a structure for the reasons presented above.

  
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4/28/2004